

MINUTES

**INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD MEETING
ABERDEEN PROVING GROUND, MARYLAND**

THURSDAY, 29 MAY 2003

7:00 p.m. – 9:30 p.m.

EDGEWOOD SENIOR CENTER

RESTORATION ADVISORY BOARD MEMBERS PRESENT AT THIS MEETING:

Mr. Kevin Barnaba
Dr. Nasrin Begum
Ms. Glenda Bowling
Mr. Arlen Crabb
Mr. Roy Dietz
Ms. Christine Grochowski (Community
Co-Chair)
Mr. Ted Henry
Mr. Greg Kappler

Mr. Karl Kalbacher (Maryland
Department of the Environment)
Mr. Thomas McWilliams, Jr.
Mr. Doug Richmond (Harford County
Emergency Operations Center)
Mr. Ken Stachiw (Army Co-Chair)
Mr. Frank Vavra (U.S. Environmental
Protection Agency)
Mr. Dennis Warwick
Ms. Ruth Ann Young

RESTORATION ADVISORY BOARD MEMBERS NOT PRESENT AT THIS MEETING:

Ms. Mandi Elliott-Bird
Ms. Loretta McCullah

Mr. Dan Pazdersky

ENCLOSURES TO THESE MINUTES:

- 1: Roster of Meeting Attendees
- 2: Agenda
- 3: June 2003 Calendar of Events
- 4: Unexploded Ordnance (UXO) Incident Reports
- 5: Perchlorate Detections Update Handout
- 6: Bush River Study Area Update Presentation Materials

I. EXECUTIVE SUMMARY

Administrative Comments

Mr. Ken Stachiw (Chief, Directorate of Safety, Health and Environment (DSHE) Environmental Conservation and Restoration Division (ECDRD)) stated that the tour of the Canal Creek Groundwater Treatment Plant and annual RAB budget meeting on 14 May 2003 were successful. Another tour of the Treatment Plant can be scheduled if any RAB Members are interested in attending.

Lauderick Creek Chemical Warfare Materiel (CWM) Removal Action Update

Mr. Billy Sanders (U.S. Army Corps of Engineers (USACE) Environmental Remediation Resident Office (ERRO)) provided an update regarding the Lauderick Creek CWM Removal Action. A total of 16,912 anomalies have been identified, with 588 anomalies identified since the 24 April 2003 RAB meeting. A total of 541 grids have been completed, with six grids completed since the April RAB meeting. Seven quality assurance/quality control grids and six resurvey grids were completed during May 2003. Two incendiary bombs and two 4.2" mortars were found during removal actions in the resurvey grids. The incendiary bombs were removed from grid G-99 and the 4.2" mortars were removed from grids H-43 and G-46. An updated Summary of Liquid Filled Munitions from the Lauderick Creek CWM Removal Action project was provided. Several items are awaiting destruction and two liquid-filled 4.2" mortars are awaiting assessment.

Perchlorate Detections Update

Mr. Stachiw provided an update on the perchlorate detections. The 27 May 2003 sampling of the City of Aberdeen production (CAP) wells detected perchlorate at 2 parts per billion (ppb) in CAP well 3. The remaining CAP wells had detections ranging from 0.2 to 0.6 ppb. The reporting limit for the CAP wells was 0.2 ppb. Perchlorate was detected below in the finished water at a concentration less than the reporting limit of 0.5 ppb.

Bush River Study Area Update

Kings Creek Chemical Disposal Site Time Critical Removal Action

Mr. Don Green (DSHE ECRD Project Officer) provided an update on the Bush River Study Area. On 10 April 2003 laboratory glassware was discovered along the Kings Creek shoreline during site reconnaissance. Additional laboratory glassware was visible within the eroded undercut bank. On 22 April 2003 brush clearance was initiated and construction of a temporary protective impoundment was completed around the removal action site. Chemical agent monitoring was started and 243 ordnance fragments along the shoreline were removed on 23 April 2003. Workers in Level B personal protective equipment removed visible glassware within the eroded bank on 24 and 25 April 2003. Glassware removed included 27 glass bottles/vials containing varying amounts of unknown solids, liquids, or multiphase chemicals, 16 empty glass bottles/vials, five glass stoppers, and two pieces of broken glassware. A total of 80 pieces of ordnance scrap were also removed from the eroded bank. On 29 April 2003 a magnetic clearance of the shoreline was completed, and the trees and brush impacted by shoreline erosion were removed. Placement of temporary sand and gravel for shoreline stabilization was completed from 30 April to 1 May 2003. The site was dressed and demobilized on 7 May 2003.

Bush River Radioactive Material Disposal Facility

Mr. Green reported that Cesium-137 (Cs-137) and arsenic contaminated soil is located in the Rad Yard. Cs-137 contaminated wastewater and sludge were found in the holding pits and the sewer system of the Rad Yard. Mustard agent degradation products and solvents were detected in the soil and groundwater

northeast of the Ton-Container Steamout site. Detected Cs-137 concentrations in the soil ranged from 99 pCi/g to 4600 pCi/g. Arsenic was detected at concentrations exceeding the maximum reference value (5.29 mg/Kg) and Risk Based Concentration (RBC) for Industrial Soil (3.8 mg/Kg).

A risk assessment was completed for the Bush River Radioactive Material Disposal Facility. The assessment supplemented the baseline risk assessment by further assessing risk associated with radionuclides and arsenic. Assessment for radionuclides provides estimates of both radiation dose and cancer risk. The risk assessment determined that nearly all radionuclide risk is due to Cs-137 in soil, with external gamma radiation as the primary exposure route. No contamination was observed in groundwater, sediment, or surface water. Human health risk levels were substantially higher than acceptable levels for both residential and industrial scenarios. Risk associated with arsenic is lower than the acceptable risk range for industrial workers, and slightly higher than the acceptable risk range for residential receptors. The risk assessment determined that ecological risk is unlikely. Cleanup levels were calculated for both unrestricted and restricted future land uses.

A proposed removal action at the Rad Yard would involve the removal of all contaminated soil (Cs-137 and arsenic), structures, and sumps. The estimated cost of the removal action is \$1.9 million. The Rad Yard encompasses approximately 4,000 cubic yards (cy) of soil contaminated with Cs-137, and approximately 5,600 cy of soil contaminated with only arsenic. Additional waste volumes from the Rad Yard include approximately 1,500 cy of demolition debris, approximately 30,000 gallons of Cs-137-contaminated wastewater, and possibly 70,000 gallons of wastewater in former WP pits.

22nd Street Landfill Characterization

A characterization of the 22nd Street Landfill was completed to determine leachate, sediment pore water, and surface water contaminant concentrations. The characterization also determined near-shore and offshore hydrogeology, sediment characteristics, preferential flow pathways, bathymetry, and the extent of the Volatile Organic Compound (VOC) plume. The characterization included collection of samples including five leachate samples, five surface water samples, and 192 sediment pore water samples at 24 dialysis sampler locations. Electronic logging and groundwater sampling collection were completed at four offshore Direct Push Technology (DPT) locations. A topographic/bathymetric survey was completed for an approximate two-acre area. The characterization also included four offshore geotechnical borings, installation and sampling of two offshore monitoring wells, and the ongoing collection of electronic groundwater elevation measurements from eight wells.

The 22nd Street Landfill characterization identified a zone of elevated metal concentrations below surface onshore within the landfill boundary, and at the near-shore boundary of the landfill and Bush River. No VOCs, semivolatile compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, explosives, agent degradation products, or elevated radionuclides were detected in leachate, surface water, or offshore groundwater north of the southern stream. South of the southern stream, mustard agent degradation products and chlorinated VOCs were detected in leachate, surface water, and groundwater within the southeast portion of the landfill. A plume of VOCs and mustard agent degradation products discharges to the near-shore environment north of the Ton-Container Steamout Site. Based on the offshore DPT results, the VOC plume extends northeast over 125 feet from the shoreline.

Southern Bush River OU3 Schedule

The schedule for the Southern Bush River Operable Unit 3 includes completion of an Engineering Evaluation/Cost Assessment for the RAD Yard in June 2003, completion of the Rad Yard removal action from June 2003 through September 2004, and completion of a Draft Feasibility Study Report for the 22nd Street Landfill in December 2003.

Operations Security (OPSEC) Procedures Discussion

Mr. Stachiw provided RAB Members with a copy of the new OPSEC-approved base map. Mr. Stachiw and Mr. Ted Henry (RAB Member) led a discussion to gather RAB Member input regarding Mr. Henry's 3-tiered approach to OPSEC issues. Mr. Stachiw encouraged all Members to review the information and provide feedback to Mr. Henry.

II. OPENING REMARKS AND ADMINISTRATIVE COMMENTS

The May 2003 U.S. Army Garrison Aberdeen Proving Ground (APG) Installation Restoration Program (IRP) Restoration Advisory Board (RAB) meeting was called to order by Mr. Kenneth Stachiw (Chief, Directorate of Safety, Health and Environment (DSHE) Environmental Conservation and Restoration Division (ECRD); Army Co-Chair) at 7:00 p.m. on Thursday, 29 May 2003. The meeting took place at the Edgewood Senior Center located at 1000 Gateway Road in Edgewood, Maryland.

Enclosure 1 to these minutes is a meeting attendance list. RAB Members in attendance received an agenda (Enclosure 2), a RAB calendar of events for June 2003 (Enclosure 3), Unexploded Ordnance (UXO) Incident Reports (Enclosure 4), a copy of the Perchlorate Detections Update handout, (Enclosure 5), and a copy of the Bush River Study Area presentation (Enclosure 6).

Mr. Stachiw announced that a successful tour of the Canal Creek Groundwater Treatment Plant and annual RAB budget meeting was held in the evening on 14 May 2003. Another tour of the Treatment Plant can be scheduled if any RAB Members are interested in attending.

After confirming the RAB Members had no further comments, Mr. Stachiw introduced Mr. Billy Sanders (U.S. Army Corps of Engineers (USACE) Environmental Remediation Resident Office (ERRO)) to provide the Lauderick Creek Chemical Warfare Materiel (CWM) Removal Action Update.

III. LAUDERICK CREEK CWM REMOVAL ACTION UPDATE

Mr. Sanders reported that a total of 16,912 anomalies have been identified, with 588 anomalies identified since the 24 April 2003 RAB meeting. A map was displayed showing a total of 541 grids completed, with six grids completed since the April RAB meeting. All grids for the Lauderick Creek CWM Removal Action project were completed.

Mr. Sanders displayed an updated Summary of Liquid Filled Munitions from the Lauderick Creek CWM Removal Action project. Several items are awaiting destruction and two liquid-filled 4.2" mortars are awaiting assessment. To date, no liquid-filled items have been determined to contain chemical fill material.

Mr. Sanders displayed a map depicting the locations of the seven quality assurance/quality control (QA/QC) grids and six resurvey grids that were completed during May 2003. Two incendiary bombs and two 4.2" mortars were found during removal actions in the resurvey grids. The incendiary bombs were removed from grid G-99 and the 4.2" mortars were removed from grids H-43 and G-46. Mr. Sanders explained that the resurvey grids, with the exception of grid G-99, were those grids determined to be saturated with anomalies. The saturation resulted in some anomalies possibly being masked by other anomalies, and therefore not removed during initial Removal Action operations.

Mr. Sanders reported that grid G-99 is located in the vicinity of the golf course adjacent to the parking lot and the clubhouse. A total of four munitions were removed from the G-99 area. After speaking with the golf course manager, a determination was made that the locations of the munitions were the result of fill material used during the construction of the parking lot and clubhouse. Mr. Sanders explained that an

investigation will be completed to determine the source of the fill material used in the G-99 grid area. All identified munitions found in Grid-99 were in an area measuring approximately 15 feet by 30 feet, and at shallow depths.

Mr. Ted Henry (RAB Member) asked for an explanation on how the resurvey grids were chosen. Mr. Sanders explained that the anomaly maps were evaluated to determine the grids with the highest number of anomalies identified. After the identified anomalies are cleared from the grids, a repeated magnetometer survey would identify additional anomalies. Larger anomalies create a shielding effect over smaller or deeper anomalies, causing some anomalies to be unidentifiable.

Mr. Sanders explained that Mr. Henry and Mr. Arlen Crabb (RAB Member) visited the Lauderick Creek site to assist in the selection of QA/QC grids. During Removal Action operations 236 grids (over 43% of total grids) had 100% of anomalies removed. In addition, during the QA/QC process, Mr. Rick Whitton assisted Mr. Sanders by choosing an additional 1,167 anomaly digs for removal. Mr. Sanders explained that the QA/QC process was ongoing throughout the Lauderick Creek project including the 100%-cleared grids along with several 30% cleared grids.

Mr. Crabb requested a map showing the grids that were 100%-cleared during the Lauderick Creek CWM Removal Action project. Mr. Sanders stated that a map would be prepared and distributed upon completion.

Mr. Sanders displayed a map showing the location of UXO items that were identified within specific grids of the Lauderick Creek Removal Action project. Mr. Sanders explained that to the east of the area from the upper part of the tributary that flows into Monks Creek down to the Bush River, no UXO-related items or fragments were identified. The only items identified in the area were two parachute flares resulting from National Guard training.

Mr. Henry asked for an explanation of the approach differences between the resurvey and QA/QC grids. Mr. Sanders explained that the geophysicists picked the grids and resurveyed the areas. Based on the resurvey of the grids, a decision was then made as to which anomalies would be investigated and removed. Mr. Henry asked Mr. Sanders to indicate grids in which anomalies were identified during the resurvey. Mr. Sanders replied that anomalies were identified in grids H-43 and G-46. Mr. Henry asked if grids H-43 and G-46 were 100%-cleared during initial Removal Action operations. Mr. Sanders stated that the grids were not 100%-cleared during the initial investigation.

Mr. Sanders explained that two pit areas were identified along the banks of the stream in grid G-5. The pit areas are in the vicinity of the location of glass vials that were previously characterized. An addendum is being prepared to address the removal of the burial pits. Protective measures include having site workers in Level A personal protective equipment (PPE), the area will be hand excavated, and monitoring will be done with Miniature Continuous Air Monitoring System (MINICAMS) with confirmation with Draegers and Depot Area Air Monitoring System (DAMMS) tubes. The maximum credible event has been changed from a Livens projectile to 40 milliliters (mL) of phosgene from a Chemical Agent Identification Set (CAIS) kit. The downwind hazard distance under stability class D will be approximately 150 feet.

Ms. Grochowski asked for the location of the burial pits in relation to any off-post schools. Mr. Sanders explained that the worst case scenario would involve the hazard traveling through a only a few grids, with no hazard reaching the schools, golf course, or housing communities. Mr. Crabb expressed concern over the close proximity of the warehouses to the burial pit locations. Mr. Sanders stated that the warehouses may be affected during a release. The B Company of Tech Escort is housed in one the warehouses, and

that unit responds to any emergency calls from the Lauderick Creek project. Mr. Sanders speculated that the disposal pits will not exceed three feet in depth. A high probability exists for breakage of the vials due to difficult digging conditions due to a thick root mat.

Mr. Henry asked for an explanation as to how the final decision was made to pick QA/QC grids. Mr. Henry also questioned how many grids were chosen that were suggested by Mr. Henry and Mr. Crabb. Mr. Sanders explained that grids E-33 and E-34 were chosen due to the recovery of 2.36" rockets from the grids. The other QA/QC grids were chosen due to the significant number of 4.2" mortars that were found in the grids. Mr. Sanders stated that he was unsure if grids suggested by Mr. Henry and Mr. Crabb for QA/QC checks were selected. Mr. Sanders will review the grid selection to determine which suggested grids, if any, were selected.

Mr. Henry requested a map showing the number of original anomalies identified in each grid. Mr. Sanders stated that a map would be prepared, and provided to Mr. Henry upon completion.

Mr. Henry expressed concern that assumptions and thought processes used throughout the Lauderick Creek CWM Removal Action Project and follow-on QA/QC processes should be reviewed. The evaluation could be used for future projects at APG that are similar in nature to the Lauderick Creek project. Mr. Sanders stated that a tremendous amount of information was generated throughout the project along with the on-going QA/QC process. Mr. Henry asked if a document exists that contains information regarding the QA/QC process. Mr. Sanders replied that the information is included in the Technical Report. The entire report should be completed and available for distribution in July or August 2003.

Mr. Karl Kalbacher (Maryland Department of the Environment (MDE)) asked if land use controls would be implemented at the Lauderick Creek CWM Removal Action project site. Mr. Stachiw explained that Mr. Don Green (DSHE ECRD Project Officer) will prepare a Record of Decision (ROD) for the Lauderick Creek area to address how the land will be used in the future. Mr. Kalbacher asked if a Land Use Control Assurance Plan (LUCAP) and Land Use Control Implementation Plan (LUCIP) exist for the area. Mr. Stachiw explained that the documents are currently being prepared.

Mr. Stachiw requested that a chart be prepared listing the QA/QC grids suggested by Mr. Henry and Mr. Crabb for the Lauderick Creek CWM Removal Action Project. Justifications should be provided for which grids were and were not selected. Mr. Sanders agreed and suggested that a meeting be scheduled to discuss the specific information Mr. Stachiw and the RAB Members are requesting.

Mr. Henry requested that RAB Members be provided with hard copies of the Lauderick Creek CWM Removal Action project update presentation. Mr. Stachiw stated that copies of the presentation would be distributed to the RAB Members upon Operations Security (OPSEC) approval.

After confirming the RAB Members had no further comments, Mr. Stachiw provided an update on the perchlorate detections.

IV. PERCHLORATE DETECTIONS UPDATE

Mr. Stachiw reported that the 27 May 2003 sampling of the City of Aberdeen production (CAP) wells detected perchlorate at 2 parts per billion (ppb) in CAP well 3. The remaining CAP wells had detections

ranging from 0.2 to 0.6 ppb. The reporting limit for the CAP wells was 0.2 ppb. Perchlorate was detected in the finished water at a concentration less than the reporting limit of 0.5 ppb.

Mr. Stachiw stated that CAP wells 7, 8, 9, and 10 will be turned back on in the near future. No remediation plans have been established but information is continually being collected and analyzed for the CAP wells, and the Harford County production wells.

After confirming the RAB Members had no further comments, Mr. Stachiw introduced Mr. Green to provide an update on the Bush River Study Area.

V. BUSH RIVER STUDY AREA UPDATE

Mr. Green provided an update on the Bush River Study Area including the Kings Creek Chemical Disposal Site time-critical removal action, Bush River Radioactive Material Disposal Facility removal action, and the 22nd Street Landfill characterization.

Kings Creek Chemical Disposal Site

Mr. Green displayed a map showing the three areas of the Bush River Study area including Cluster 3, Northern Bush River, and Southern Bush River. Maps were also displayed depicting the location of the time-critical removal action site located on the shoreline of Kings Creek.

Mr. Green reported that on 10 April 2003 laboratory glassware was discovered along the Kings Creek shoreline during site reconnaissance. Additional laboratory glassware was visible within the eroded undercut bank. On 22 April 2003 brush clearance was initiated and construction of a temporary protective impoundment was completed around the removal action site. Chemical agent monitoring was started and 243 ordnance fragments along the shoreline were removed on 23 April 2003. Mr. Green displayed photographs of the protective impoundment construction.

Mr. Green informed the RAB Members that workers in Level B PPE removed visible glassware within the eroded bank on 24 and 25 April 2003. Glassware removed included 27 glass bottles/vials containing varying amounts of unknown solids, liquids, or multiphase chemicals, 16 empty glass bottles/vials, five glass stoppers, and two pieces of broken glassware. A total of 80 pieces of ordnance scrap were also removed from the eroded bank.

Mr. Green displayed pictures of the Level B removal of glassware, examples of the removed glassware, and over-packed glassware. The contents of the glassware are presently unknown. The over-packed glassware was taken to the Chemical Transfer Facility (CTF) for analysis. To date, no over-packed glassware has been found to contain chemical agent.

Mr. Henry questioned what agency was completing the chemical analysis. Mr. Green explained that personnel from the CTF are handling the analysis. Ms. Grochowski asked for what agents were being analyzed. Mr. Green responded that the chemical analysis is for lewisite and mustard. Additional analysis will be completed for disposal purposes.

Mr. Green displayed pictures of empty glassware and ordnance fragments that were recovered from the Kings Creek removal action location. The ordnance fragments were primarily composed of fuzes and melted materials from Stokes and 75-mm mortars.

Mr. Green reported that on 29 April 2003, a magnetic clearance of the shoreline was completed for an area measuring approximately 25 feet by 300 feet, and the trees and brush impacted by shoreline erosion

were removed. An additional 33 pieces of ordnance scrap were removed from the site on 29 April 2003. Placement of temporary sand and gravel for shoreline stabilization was completed from 30 April to 1 May 2003. The site was dressed and demobilized on 7 May 2003. Mr. Green displayed a photograph depicting the construction of the shoreline stabilization.

Dr. Cal Baier-Anderson (Technical Assistance Grant (TAG) Consultant) questioned if more waste remains at the Kings Creek removal action location. Mr. Green stated that more glassware is present further inward from the shoreline. The health and safety requirements are being evaluated, and a work plan is being prepared to further address the extent of the waste at the site. Mr. Kalbacher asked if soil sampling will be completed after completion of removal action operations. Mr. Green explained that soil, sediment, and surface water sampling will be completed.

Dr. Nasrin Begum (RAB Member) asked if a characterization of the waste in the glassware would be completed. Mr. Green stated that the compounds in the glassware would be tested for Resource Conservation and Recovery Act (RCRA) characteristics, and then further analyzed to identify the material.

Mr. Greg Kappler (RAB Member, various committees) asked if any consideration had been given to investigating the near-shoreline sediments in Kings Creek for imbedded glassware. Mr. Green stated that a magnetometer survey clearance was completed along the immediate shoreline. A possibility exists that glassware could be present in sediments further away from the shoreline. Mr. Green stated that an evaluation could be done to determine the likelihood of glassware being imbedded in the sediments of Kings Creek. Mr. Kappler asked how much glassware was observed on the immediate shoreline. Mr. Jason Ebrite (General Physics Corporation) stated that a geophysical survey was completed along the shoreline, 25 feet into the Creek. As a result of the survey, several ordnance scrap items were removed along with glassware. With the exception of one wide-mouth jar, all glassware contained only river water. The wide-mouth jar contained some river water with a solvent in the bottom of the jar. Mr. Kappler questioned if any subsurface digging was completed to remove anomalies. Mr. Ebrite explained that digging was completed to remove metallic hits identified by the magnetometer, but the glassware is unidentifiable with the magnetic survey.

Mr. Crabb asked if it was possible to date the recovered glassware. Mr. Ebrite explained that the bottles did not appear to have a definitive embossed date. After the removal and analysis of the contents of the bottles, an effort will be made to date the glassware. Mr. Green speculated that, based on historic photos and the history of the Kings Creek site, the bottles may date back to the 1920s or 1930s.

Ms. Grochowski questioned the condition of the wooden boxes that contained the glassware. Mr. Ebrite stated that only faint remnants of the boxes were visible, and the boxes were dry-rotted almost beyond recognition. Ms. Grochowski asked how many boxes were observed at the site. Mr. Ebrite stated that the boxes were stacked only one deep, but in multiple horizontal rows.

Operable Unit 3 (OU 3) – Toxic Gas Yard/ Rad Yard and 22nd Street Landfill

Mr. Green displayed a graphic depicting OU 3 sites and features. The 22nd Street Landfill is an 8.3-acre site located in the northern section of OU 3. The 22nd Street Landfill is the largest Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) landfill site at APG. The area was originally marsh, and was filled in. To the south is the 3.1-acre Toxic Gas/Rad Yard. The Toxic Gas Yard served as the chemical agent storage yard (CASY) before WWII. The site later became the Rad

Yard after the one-ton containers were moved to the current CASY. Mr. Green displayed several photos illustrating former low-level liquid radiological waste processing facilities. The liquid waste was processed through evaporation units for concentration. At the time of use, the wastewater was disposed of through sumps located under the floor, while solid waste was contained in drums and shipped off-site for disposal. A summary of contamination in OU 3 includes: Cesium-137 (Cs-137) and arsenic contaminated soil in the Rad Yard at depths less than one foot; Cs-137 contaminated wastewater and sludge in the holding pits and the sewer system of the Rad Yard; and mustard agent degradation products (1,4-Dithiane and 1,4-Oxathiane) and chlorinated solvents in the soil and groundwater northeast of the Ton-Container Steamout site.

The detected Cs-137 concentration in the soil at sample point SS-03 was 4600 picoCuries per gram (pCi/g). Three wastewater sample locations (WW-01, WW-02, WW-03) had Cs-137 concentrations of 480, 2100, and 2100 pCi/g, respectively. The sludge sample (SL-04) taken in one of the buildings in which radiological waste processing occurred detected Cs-137 at 99 pCi/g.

Mr. Roy Dietz (RAB Member) questioned the significance of the detected concentrations. Mr. Green stated that a risk assessment indicates the detected levels exceed USEPA industrial site worker and residential standards, and also exceed Nuclear Regulatory Commission (NRC) standards for release of a site. Mr. Green noted that the site is licensed under the NRC. However, it is safe for a person to walk on the property without protective equipment for a short period of time.

Dr. Baier-Anderson inquired if Mr. Vavra had received the data from an over-flight gamma aerial survey. Mr. Vavra indicated he had not received the data. Dr. Baier-Anderson stated that an area of gamma radiation appeared to be located further northwest, extending into the 22nd Street Landfill area, based on review of the over-flight data. She suggested to Mr. Green that the over-flight data be considered during the removal action planning. Mr. Vavra replied that he had not seen the data, but material emitting gamma radiation could be located under the landfill. Mr. Green concurred that the data should be reviewed, but noted that the removal action is addressing only the known, near-surface source material. If a source exists deeper under the landfill, that will have to be separately addressed.

Mr. Vavra questioned the source of the Cs-137 contaminated liquids. Mr. Green stated that Department of Defense (DoD) facilities along the east coast of the U.S. contributed the waste, dating back to the 1950's.

Mr. Kappler asked Mr. Green to confirm that underground pipes exist at or near sampling location SL-04. Mr. Green explained that sewer lines extend along the building, connecting to a shower building, to another nearby building, and connecting to pits leading to the marsh discharge line. As a part of the removal action, the sewer lines will be removed and the soil beneath will be evaluated for contamination.

Mr. Green displayed a graphic depicting the extent of the arsenic contaminated soil, which is more widespread than the Cs-137 contamination. At sample point SS-01, arsenic was detected at 230 mg/Kg. This concentration exceeds the maximum reference value (5.29 mg/Kg) and Risk Based Concentration (RBC) for Industrial Soil (3.8 mg/Kg). This area of contamination will be addressed through the removal action.

A risk assessment was completed for the Bush River Radioactive Material Disposal Facility, based on the Remedial Investigation (RI) data. A supplemental risk assessment includes additional data collected during the feasibility study (FS), a quantitative assessment of human health risk, and a screening level and comparative assessment of ecological risk.

Assessment for radionuclides provides estimates of both radiation dose and cancer risk. The dose estimates support removal of the site from the NRC license. Cancer risk estimates support remediation under CERCLA requirements.

Mr. Kappler inquired what “removal of site from NRC license” means. Mr. Green explained NRC cleanup standards needed to remove the site from the NRC license are based on radiation dose to the receptor. By comparison, EPA evaluates concentrations, rather than radiation doses from the radionuclide. Mr. Green added that “removal from the license” means the NRC would consider the Toxic Gas and Rad Yards closed sites. The site would then be under CERCLA jurisdiction. Mr. Green noted that the removal action approach is to address the contamination to meet both NRC and CERCLA requirements. Mr. Vavra added that a memorandum of agreement exists between the EPA and NRC, and EPA usually establishes the limits at a CERCLA site. The EPA’s requirements are usually stricter.

Dose and risk calculations were performed using RESRAD, a residual radioactivity risk assessment software developed by the Department of Energy (DOE). Risk estimates were performed for various industrial, trespasser, recreational, and suburban and farming residential scenarios. The exposure assumptions are consistent with EPA guidance for risk assessments addressing chemicals, except for the addition of garden produce consumption by residents and animal consumption by farmers and recreationists. Mr. Green noted that the site is just large enough to consider the gardening and farming scenarios. The dose and risk estimates are based on very conservative “reasonable maximum exposure” levels under EPA methodology.

Mr. Vavra noted that the EPA Region III radiation specialist has indicated approval of the radiological risk assessment. The risk assessment determined that nearly all radionuclide risk is due to Cs-137 in soil, with external gamma radiation as the primary exposure route. No contamination was observed in groundwater, sediment, or surface water. Human health risk levels were substantially higher than EPA acceptable levels for both residential and industrial scenarios, and the dose is substantially higher than the allowable NRC dose for removal from the license. Risk associated with arsenic is within the acceptable risk range for industrial workers, and slightly higher than the acceptable risk range for residential receptors. The risk assessment determined that ecological risk is unlikely, but any ecological risk associated with Cs-137 in soil would be mitigated by actions to protect human health.

Cleanup levels were calculated for both unrestricted and restricted future land uses. The “as low as reasonably achievable” (ALARA) cleanup levels required by the NRC are equivalent to the more stringent EPA cleanup levels. While the cleanup levels are based on human health protection, they are also protective of ecological receptors.

Mr. Green reported that an Engineering Evaluation/Cost Analysis (EE/CA) has been completed for the planned removal action. The EE/CA is currently in final signature stages, and a public meeting will be held once the EE/CA is finalized. The EE/CA considered two options in addition to the No Action alternative: capping and removal. The NRC would not accept capping as a final remedy, since that would leave the radiation source in place.

The proposed removal action at the Rad Yard would involve the removal of all contaminated near surface soil (Cs-137 and arsenic), structures, and sumps. The estimated cost of the removal action is \$1.9 million. Mr. Green noted that a contract has been awarded for the removal action at a cost of \$1.3 million, but a potential exists for cost growth if additional contamination is found. The Rad Yard encompasses approximately 4,000 cubic yards (cy) of soil contaminated with Cs-137, and approximately 5,600 cy of soil contaminated with only arsenic. Additional waste volumes from the Rad Yard include approximately 1,500 cy of demolition debris (estimated 25 percent contaminated with Cs-137), approximately 30,000

gallons of Cs-137-contaminated wastewater; and possibly 70,000 gallons of wastewater in former white phosphorus (WP) pits.

Dr. Begum requested a copy of the Rad Yard risk assessment document. Mr. Green indicated the document will be provided.

VI. INTERMISSION

At 8:30 p.m Mr. Stachiw announced a brief intermission. At 8:40 p.m., the meeting resumed, with the conclusion of the Bush River Study Area Update.

VII. BUSH RIVER STUDY AREA UPDATE CONTINUED

22nd Street Landfill Characterization

Mr. Green explained that a characterization of the 22nd Street Landfill was completed to determine leachate, sediment pore water, and surface water contaminant concentrations. The characterization also determined near-shore and offshore hydrogeology, sediment characteristics, preferential flow pathways, bathymetry, and the extent of the Volatile Organic Compound (VOC) plume. The characterization included the collection of five leachate samples, five surface water samples, and a total of 192 sediment pore water samples at 24 dialysis sampler locations. Electronic logging and groundwater sampling were completed at four offshore Direct Push Technology (DPT) locations. A topographic/bathymetric survey was completed for an approximate two-acre area.

The characterization also included four offshore geotechnical borings with the collection of 25 subsurface soil samples for physical testing, four shelly tube samples for permeability analysis, and four near-shore sediment samples for metals analysis. Additionally, two offshore monitoring wells were installed and sampled. Characterization also includes the ongoing collection of electronic groundwater elevation measurements from eight wells. Mr. Green displayed several graphics of 22nd Street Landfill leachate, surface water, and sediment pore water sampling locations. Mr. Green displayed a graphic depicting the 22nd Street Landfill sampling locations in relation to the Rad Yard and Bush River.

Results from the characterization indicated total metal concentrations exceeding both USEPA Region III Biological Technical Assistance Group (BTAG) screening levels and background values for surface water. In the northern stream, copper (Cu), lead (Pb), and zinc (Zn) were found at concentrations in sediment pore water exceeding comparison criteria, and iron (Fe), mercury (Hg), and Zn were detected at elevated levels in surface water. The leachate samples collected inland of the east-central landfill (10 feet from the shoreline) yielded high concentrations of aluminum (Al), chromium (Cr), Cu, Fe, Pb, Hg, and Zn. The sediment pore water samples collected near-shore of the east-central landfill yielded high concentrations of Fe, Pb, manganese (Mn), and Zn. Leachate samples taken from the southern stream area found Al, cadmium (Cd), Cr, Cu, Fe, Pb, Hg, and Zn. Sediment pore water samples in the same area had elevated concentrations of Cr, Fe, Pb, and Zn. The surface water samples from the southern stream had elevated concentrations of Cr, Cu, Fe, Pb, Hg, and Zn. In the near-shore area of the southeast portion of the landfill, sediment pore water samples yielded high concentrations of Cr, Pb, and Zn.

Dr. Begum inquired about the chemical state of the chromium found in the samples. Mr. Green replied that the lab analyzed for total chromium, but hexavalent chromium is assumed for risk assessments.

One leachate sample collected near-shore of the southeast portion of the landfill had concentrations of 49 parts per billion (ppb) 1,4-dithiane and 11 ppb 1,4-oxathiane. A sediment pore water sample collected at

the mouth of the southern stream yielded concentrations of chlorinated VOCs: 50 ppb cis-1, 2-dichloroethene (DCE), 18 ppb trichloroethene, and 7 ppb chloroform. One surface water sample taken at the mouth of the southern stream contained 7.3 ppb thiodiglycol.

Mr. Green displayed a graphic depicting offshore hydrogeology and sediment characteristics. The upper surficial aquifer, which is absent immediately offshore of the 22nd Street landfill, discharges to surface water offshore. The lower surficial and upper surficial aquifers are connected at an upgradient, on shore location, and high concentrations of VOCs have been detected in the lower surficial aquifer beneath the Rad Yard. The lower surficial aquifer pinches out into the sediment at an offshore location. The sediment consists of very soft organic silts and clays and ranges in thickness from 11 to 31.5 feet. The water-bearing units offshore of the landfill consist of discontinuous sand layers ranging from three to seven feet thick. The basal clay confining unit was encountered between 18.5 and 36 feet below the mud line.

Contaminant transport pathways from the 22nd Street Landfill include the discharge of metals in landfill leachate to streams and the Bush River shoreline; groundwater discharges through sediment to the Bush River; metals transport occurs through diffusion in the near-shore zone 5 to 20 inches below the mud line and ground surface; and one potential VOC discharge zone was identified 3.5 to 5 inches below the mud line at the mouth of the southern stream.

The 22nd Street Landfill characterization identified a zone of elevated metal concentrations below surface onshore within the landfill boundary, and at the near-shore boundary of the landfill and the Bush River. No VOCs, semivolatile compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, explosives, agent degradation products, or elevated radionuclides were detected in leachate, surface water, or offshore groundwater north of the southern stream. South of the southern stream, mustard agent degradation products and chlorinated VOCs were detected in leachate, surface water, and groundwater within the southeast portion of the landfill. A plume of VOCs and mustard agent degradation products discharges to the near-shore environment north of the Ton-Container Steamout Site. Based on the offshore DPT results, the VOC plume extends northeast over 125 feet from the shoreline. Mr. Green displayed a graphic of the offshore groundwater VOC plume, indicating the higher concentration located under the Rad Yard and Ton Container Steamout Site.

The Southern Bush River OU3 schedule indicates that the EE/CA for the Rad Yard was completed in May 2003, and will be published in June 2003, with a public meeting to occur in July. The Rad Yard removal action has been contracted and will occur from June 2003 through September 2004. The work plan is currently under development. The Draft Feasibility Study report will be complete in December 2003.

Mr. Vavra inquired when to expect the OU3 removal action work plan. Mr. Green noted that the contract was awarded to Roy F. Weston in May 2003. Mr. Green stated that the work plan will include a health and safety plan, and will require several months to complete due to the significant coordination necessary with both the EPA and NRC.

Mr. Henry questioned where the Rad Yard and detected Cs-137 are located in geographic relation to the 22nd Street Landfill. Mr. Green indicated on a map the Rad Yard's location, south of the landfill. Mr. Henry inquired if analysis for radiological compounds was completed at the 22nd Street Landfill site. Mr. Green confirmed that analysis for radiological compounds was completed, and indicated that no radiological compounds were detected in the groundwater, surface water, or sediment samples collected at the 22nd Street Landfill site.

Mr. Kalbacher queried if more studies are planned for the offshore sediments and porewater. Mr. Green replied that the data collected to date provides adequate characterization of the nature and extent of contamination. The risk assessment will be updated and remedial actions will be evaluated. Mr. Green noted that removal of the landfill is not considered a viable option, given the 8.3-acre size and potential for munitions to be present in the waste. Possible actions include capping the landfill, shoreline stabilization, and creating a constructed wetland offshore to cover the contaminated sediment and capture metals discharge. Mr. Green noted that Louisiana State University is providing support for evaluation of the constructed wetlands, in collaboration with Dr. Michelle Lorah of the US Geological Survey.

Mr. Vavra inquired if a slurry wall has been considered as part of the evaluation. Mr. Green replied that he will evaluate the technique, but is not certain of its effectiveness due to the lack of groundwater at the base of the marsh. A solid clay unit forms the bottom of the marsh. Mr. Green noted that a slurry wall at the toe would require a totally impermeable cap over the landfill. A slurry wall is most effective with a permeable bottom layer. Mr. Green recounted that an attempt was made to place a well in the center of the landfill, but the waste could not be penetrated to install the well. Mr. Green noted the waste is believed to include sanitary waste, medical waste, rubble from laboratory buildings, a reported one-ton container of bromobenzyl cyanide, mustard sludge, low-level radiological waste, and potential munitions.

Mr. Henry suggested excavating the landfill. Dr. Baier-Anderson supported the suggestion, and expressed to the RAB Members her concern that Army Environmental Center (AEC) will view long-term monitoring as costing too much money. She fears future pressure to scale-down on the monitoring within five years, and cited the O-Field site as an example. She encouraged Mr. Green to fully investigate excavation as an alternative. Dr. Baier-Anderson requested that a realistic cost estimate be performed for both the excavation alternative and the long-term monitoring requirements, to avoid future funding concerns. Another issue the RAB should consider is the idea of using low-level radiological waste, from the Rad Yard Site, as base material for the 22nd Street Landfill cap. Dr. Baier-Anderson expressed her concern that such issues be brought out prior to the public meeting so the public will have an opportunity to comment.

Mr. Green clarified that these issues are not part of the upcoming EE/CA and removal action, but of the Record of Decision (ROD). He urged the RAB Members to provide feedback on possible remedial alternatives. He explained that low-level radiological contaminated soil not meeting the EPA criteria for being left on site, but meeting the NRC criteria for site close-out, could be managed under CERCLA as part of the 22nd Street Landfill cap. However, any such action would have to be addressed as part of the ROD for the 22nd Street Landfill, and could provide cost savings.

Mr. Henry suggested reviewing removal actions further to compare 22nd Street Landfill alternative costs to past and projected costs for the Old O-Field site. Mr. Green highlighted his belief that the degree of contamination is greater at O-Field and waste in the 22nd Street Landfill more closely resembles an old municipal landfill wastestream, with miscellaneous hazardous waste. Mr. Henry inquired if the 22nd Street Landfill operated into the 1970s. Mr. Green confirmed that statement. Mr. Henry stated his belief that the landfill likely contains many containers that have not lost their contents. Mr. Green replied that the numbers and types of any containers in the landfill are unknown. When attempts were made to characterize the fill, metals avoidance was required. Waste encountered included railroad ties and concrete, and the waste could not be penetrated.

Ms. Grochowski inquired to whom the AEC is accountable. Mr. Stachiw explained that AEC is seeking a balance between finding a better and cheaper method to accomplish long-term operations or monitoring, while still meeting regulatory requirements. AEC cannot change the monitoring plan established in the ROD, but encourages reducing costs through new technology, different contracting methods, or new

monitoring methods. Mr. Stachiw stressed that the Department of the Army is accountable for actions required by a ROD, but those actions must be reviewed at least every five years to evaluate the efficiency of continuing or changing those actions. If a change is agreed upon, then it is considered a significant difference, and a ROD amendment can be prepared.

Mr. Stachiw clarified that the landfill closed in the early 1970s. Mr. Green concurred, and noted that aerial photographs from the late 1960s and early 1970s show the site being closed by pushing soil across the surface. The material in the landfill likely dates back to the post-WWII timeframe.

After confirming the RAB Members had no further questions, Mr. Stachiw began a discussion of Operations Security (OPSEC) issues.

VIII. OPERATIONS SECURITY DISCUSSION

Mr. Stachiw provided RAB Members with copies of the new OPSEC-approved base map. Mr. Stachiw explained that copyright restraints prevented addition of some Baltimore County information. Ms. Grochowski expressed her satisfaction with the degree of detail provided for the Baltimore County portion of the map.

Mr. Stachiw and Mr. Ted Henry (RAB Member) led a discussion to gather RAB Member input regarding Mr. Henry's 3-tiered approach to OPSEC issues. Mr. Henry informed the RAB Members that final corrections and additions were almost complete for the proposal for maintaining National Security and Environmental Restoration at APG. He anticipated the document's completion in the first week of June.

Mr. Henry requested volunteers for the board designed to address Tier III OPSEC issues. Mr. Henry stated his willingness to attend, and indicated that Ms. Grochowski will participate as well. Mr. Stachiw stated that Mr. Kappler volunteered. Mr. Henry requested that the minutes reflect the need for other participants as well. Mr. Henry expressed that his goal is to have a minimum three RAB Member volunteers, with at least two members in attendance at the meetings. Mr. Stachiw and Mr. Joe Kaffl (APG Operations Security Division) would represent the Army. The first meeting would be held once the proposal for "Maintaining National Security and Environmental Restoration at APG" is finalized by Mr. Henry and distributed to all of the RAB Members.

Mr. Thomas McWilliams (RAB Member) asked Mr. Henry to clarify the board under discussion. Mr. Henry explained the board would include RAB Members, Mr. Stachiw, Mr. Kaffl, and MDE and EPA, if they choose to attend. The board members would be expected to attend emergency meetings to discuss Tier III issues as they arise. Mr. McWilliams questioned if a RAB Member volunteering for the board would have to be available for every meeting. Mr. McWilliams suggested an alternative approach to have several RAB Members who are potentially available, with hopefully at least three able to attend any called meeting. Mr. McWilliams expressed his willingness to participate on the board. Mr. Henry stated that Ms. Katrina Harris (General Physics Corporation) should contact each RAB Member to confirm, by "yes" or "no" statements, a desire to volunteer on the board.

Mr. Henry informed the RAB Members that he has been reviewing the transcripts of the OPSEC discussion from the recent RAB meetings to identify the RAB's most pressing OPSEC concerns and needs. Such topics include drinking water well locations and building structures on maps. He plans to obtain and review the April 2003 transcript. RAB Members should notify Mr. Henry of other topics that need to be immediately addressed.

Mr. Vavra recounted to the RAB Members that other Army bases have included buildings on base maps. The footprints are not shown; an oval or square shape represents the building. Mr. Henry commented that a similar suggestion was made to Mr. Kaffl, who has been non-committal on whether that approach is acceptable. Mr. Stachiw stressed that once a working group is formed, such issues may be further discussed.

Mr. Henry requested a copy of Mr. Kalbacher's memo on behalf of MDE and Mr. Dick Wakeling's (APG Legal) response. Mr. Stachiw stated that he would obtain a copy of an email prepared by Mr. Wakeling in response to Mr. Kalbacher's memo for distribution to the RAB Members.

Mr. Vavra mentioned the letter of intent to file suit sent by the University of Maryland, on behalf of APG Superfund Citizens Coalition (APGSCC). The letter, mailed to EPA and the Army, opposes censorship of documents by OPSEC. Mr. Vavra expressed his concern that detailed maps are not being constructed and then scaled-back by OPSEC for release to the public. He had assumed that detailed maps were still being made, with the more generic map being distributed to the public. His concern is that contractors will only create the vague OPSEC-approved maps and essential information may be lost. Mr. Vavra suggested that two maps be created--a fully detailed map for contractors to keep in the Administrative Record, and another, more general map for public viewing. If needed, the detailed maps could then be available for review by regulators and stakeholders, although not distributed. Mr. Kalbacher added his concerns to those of Mr. Vavra. Mr. Stachiw expressed his belief that the goal has always been to provide as much information as possible for public release. Mr. Vavra stressed the legal requirement for the Administrative Record to contain all the information relied upon to make the CERCLA decision for a given site. If the maps are not releasable, or the releasable version does not contain all the information relied upon for decision-making, that scenario becomes a legal issue.

Mr. Henry stated that he has been seeking for some time, from Mr. Kaffl, a written list of what is allowed and a separate list of what is not allowed on the OPSEC-approved maps. Overcoming that hurdle is the first step. He suggested looking at past maps and recording everything that was once allowed, and determine the level of detail necessary on maps. Mr. Henry expressed his concern that the decision of the level of detail to be included is being made by contractors. Mr. Vavra stated that building numbers are not necessary, generic shapes for buildings could be useful, and that locations of streams, wetlands, and receptors are essential on maps. Mr. Stachiw stated that Mr. Kaffl is working to create a consolidated list of acceptable map features. He added that iterations will be necessary, perhaps for individual maps, to determine how to present information on fully-releasable maps. If not fully releasable, then use of a restricted statement may be required. The goal is to get the information to the public in a format that citizens can understand. Mr. Stachiw suggested that Ms. Grochowski take the lead in determining the agenda for the task force meeting.

Mr. Henry asked Mr. Stachiw to confirm his belief that the RAB should move away from Tier II in general, with the goal of having documents either releasable or Tier III. Mr. Stachiw clarified that the goal should be to have documents prepared such that a restriction stamp would not be necessary. Fulfilling that goal would give everyone access to the documents without restriction, thus meeting the RAB's and Mr. Kaffl's requirements. Mr. Stachiw stated that the goal is shared by everyone involved, but will require work. He added that the goal might not be met for all documents.

Mr. Stachiw noted that the decision not to include drinking water wells on maps is not Mr. Kaffl's decision. Mr. Henry questioned if that decision is governed under written policy. Mr. Stachiw stated his belief that the decision comes from EPA and MDE policy. Mr. Henry asked if written policy has been issued by EPA and MDE concerning the decision to exclude drinking water wells from maps. Mr.

Kalbacher stated that he is unaware of written policy, but the well locations have been removed from EPA and MDE website documents.

Mr. Vavra stated that legal issues have to be resolved regarding the strength of Presidential directives and directives from the Department of Justice. Mr. Vavra cited a memo by Attorney General John Ashcroft changing several Presidential directives, as a result of the events of September 11, 2001, and the need to protect assets. Mr. Henry clarified that the Ashcroft memo was actually prepared prior to “9-11.”

Mr. Stachiw summarized by stating that the next step is to finalize Mr. Henry’s document and get the working group together with a planned agenda. Mr. Vavra asked for clarification that he should contact Mr. Henry with his comments and concerns. Mr. Stachiw concurred, and asked that he be copied on correspondence, including emails, so that he can be informed of issues and concerns.

IX. CLOSING REMARKS

At 9:30 p.m., after confirming that no one present had further questions, Mr. Stachiw adjourned the meeting. The next APG IRP RAB Meeting will be held on Thursday, 26 June 2003 at 7:00 pm in the Edgewood Senior Center. The tentative topics for discussion are the Lauderick Creek CWM Removal Action and the Other Edgewood Areas Study Area update.